

CLAIMS

What is claimed is:

1 1. A pivot port that can support a surgical
2 instrument controlled by a robotic arm, comprising:

3 a pivot arm;

4 an adapter that has an aperture adapted to receive the
5 surgical instrument; and,

6 a first joint that couples said adapter to said pivot
7 arm.

1 2. The pivot port of claim 1, further comprising a
2 second joint that couples said adapter to said pivot arm.

1 3. The pivot port of claim 2, further comprising a
2 ring that supports said adapter and is coupled to said
3 first and second joints.

1 4. The pivot port of claim 3, wherein said adapter
2 includes a flange that is adjacent to an inner lip of said
3 ring.

1 5. A pivot port that can support a surgical instrument
2 controlled by a robotic arm, comprising:

3 a pivot arm; and,

4 a ball joint that is coupled to said pivot arm and has
5 an aperture adapted to receive the surgical instrument.

1 6. The pivot port of claim 5, wherein said ball joint
2 has a plurality of apertures.

1 7. The pivot port of claim 5, further comprising a
2 ring that is attached to said pivot arm and supports said
3 ball joint.

1 8. A medical system, comprising:

2 a pivot arm;

3 an adapter that has an aperture;

4 a first joint that couples said adapter to said pivot
5 arm;

6 a surgical instrument that extends through said
7 aperture of said adapter; and,

8 a robotic arm that can move said surgical instrument.

1 9. The system of claim 8, further comprising a second
2 joint that couples said adapter to said pivot arm.

1 10. The system of claim 8, further comprising a ring
2 that supports said adapter and is coupled to said first and
3 second joints.

1 11. The system of claim 10, wherein said adapter
2 includes a flange that is adjacent to an inner lip of said
3 ring.

1 12. The system of claim 8, further comprising a
2 support arm assembly that supports said pivot arm.

1 13. The system of claim 12, wherein said support arm
2 assembly includes a table mount, a support arm coupled to
3 said table mount and an end effector coupled to said
4 support arm and said pivot arm.

1 14. The system of claim 13, wherein said support arm
2 assembly includes a first linkage pivotally connected to
3 said table mount, a second linkage pivotally connected to
4 said first linkage, and a third linkage pivotally connected
5 to said second linkage and said end effector.

1 15. A medical system, comprising:

2 a pivot arm;

3 a ball joint that is coupled to said pivot arm and has
4 an adapter;

5 a surgical instrument that extends through said
6 aperture of said ball joint; and,

7 a robotic arm that can move said surgical instrument.

1 16. The system of claim 15, wherein said ball joint
2 has a plurality of apertures.

1 17. The system of claim 15, further comprising a ring
2 that is attached to said pivot arm and supports said ball
3 joint.

1 18. The system of claim 15, further comprising a
2 support arm assembly that supports said pivot arm.

1 19. The system of claim 18, wherein said support arm
2 assembly includes a table mount, an support arm coupled to
3 said table mount and an end effector coupled to said
4 support arm and said pivot arm.

1 20. The system of claim 19, wherein said support arm
2 assembly includes a first linkage pivotally connected to
3 said table mount, a second linkage pivotally connected to
4 said first linkage, and a third linkage pivotally connected
5 to said second linkage and said end effector.

1 21. A method for performing a medical procedure on a
2 patient, comprising:

3 creating an opening in the patient;

4 locating a pivot port adjacent to the opening in the
5 patient,

6 coupling a surgical instrument to the pivot port; and,

7 moving the surgical instrument with a robotic arm to
8 perform the medical procedure.

1 22. The method of claim 21, wherein the surgical
2 instrument is inserted through an aperture of an adapter of
3 the pivot port.

4 23. The method of claim 21, wherein the patient has an
5 open chest.

1 24. The method of claim 21, wherein the surgical
2 instrument is inserted through an aperture of a ball joint
3 of the pivot port.